

## Patent claims

1. An appliance for the gasification of carbon- and ash-containing fuel, residual and waste materials using an oxygen-containing oxidizing agent at temperatures above the melting point of the inorganic fractions, in a reaction chamber which is designed as an entrained-bed reactor, at pressures between atmospheric pressure and 80 bar, preferably between atmospheric pressure and 30 bar, the contour of the reaction chamber being delimited by a cooled reactor wall of the following structure, from the outside inward:

- pressure shell (3)
- cooling wall (4)
- water-cooled cooling gap (5) between pressure shell (3) and cooling wall (4)
- ceramic protection (6) for the cooling wall (4)
- layer of slag (10)

and the pressure and temperature of the cooling gap (5) between pressure shell (3) and cooling wall (4) being controlled in such a way that it can be operated above and below the boiling point of the cooling water, the pressure in the cooling gap being higher than the pressure in the gasification chamber.

2. An appliance for gasification of carbon-containing, ash-free fuel, residual and waste materials using an oxygen-containing oxidizing agent at temperatures above 850°C, in a reaction chamber which is designed as an entrained-bed

reactor, at pressures between atmospheric pressure and 80 bar, preferably between atmospheric pressure and 30 bar, the contour of the reaction chamber being delimited by a cooled reactor wall of the following structure, from the outside inward:

- pressure shell (3)
- cooling wall (4)
- water-cooled gap (5) between pressure shell (3) and cooling wall (4)
- ceramic protection (6) for the cooling wall (4)
- refractory lining (7)

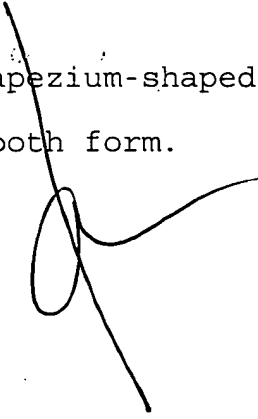
and it being possible for the cooling gap (5) between the pressure shell (3) and cooling wall (4) to be operated, with a filling of pressurized water, above or below the boiling point of the cooling water, the pressure in the cooling gap (5) being higher than the pressure in the gasification chamber (1).

3. The appliance as claimed in claims 1 and 2, in which the cooling wall (4) comprises half-tubes which have been welded together in a gastight manner, are pinned and are coated with a thin layer of ceramic mass with a high thermal conductivity.

4. The appliance as claimed in claims 1 and 2, in which the thin layer of ceramic mass is applied to the cooling wall (4) by flame spraying.

5. The appliance as claimed in claims 1 to 4, in which the cooling wall (4) may be of geometric shapes, such as

trapezium-shaped, triangular, rectangular, of undulating or smooth form.



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